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accuracy the contour and correct relative size of North America, and its separation by a strait from Asia, it is the Mercator world map of 1569, the first of importance, on which these features are well presented. While the new—and, in the main, original—projection employed by Mercator in this map led to great distortion in the extreme northern regions, the type of which it is the most conspicuous example presents the New World as a continent apart from the Old World. The strait leading from the Atlantic into the South Sea. so conspicuous on the early Portuguese maps as on the Lusitano-Germanic maps, above referred to, has disappeared, as has the very rapid trend of the Atlantic coast-line of North America, so characteristic of early Spanish maps. Verrazano's Sea has likewise disappeared, and the Pacific coast-line is complete, although as vet drawn, in great part, according to conjecture. There are many special features of the type, to one of which only will reference here be made, and this is the peculiar trend of the lower Pacific coast of South America. For this inaccuracy no satisfactory explanation has been given. It, however, is a marked feature of the Mercator maps, reappearing in the Ortelius, the Myritius, the Cornelius de Judæis, and in a number of other maps in which the Mercator influence is decidedly traceable.

It will not for one moment be contended that maps of this type give us a correct presentation of the Western Continent; the errors are still numerous. We do, however, have the Western Hemisphere, as has been said, with outlines approaching accuracy.

THE MIKKELSEN-LEFFINGWELL EXPEDITION.

The Society received, on March 9, a letter from Captain Ejnar Mikkelsen, joint commander with Mr. E. K. Leffingwell of the Anglo-American Polar Expedition. It was written at Flaxman Island, on the northeast coast of Alaska in about 146° W. Long. The letter was probably written in September or October last. Means were found to send it south, and it is marked as received at the office of the Royal Mounted Police, Dawson, Canada, on Feb. 17, 1907. The letter follows:

"The season of ice navigation has been so unfavourable that the expedition could not reach the desired winter quarters in Minto Inlet. The chance of attaining that point in Prince Albert Land

was very small, and we decided not to run the risk, but to go into winter quarters where we were certain that work of value could be done. The expedition has reached Flaxman Island, about 240 statute miles west of the Mackenzie River delta. This will be our winter quarters.

"If it had not been for the kindness of Captain Cottle, of the steam whaler *Belvedere*, and the interest he took in our work, we probably could not have passed Point Barrow. He took us in tow and brought us through the heavy ice to the north and east of Point Barrow. With the wind and the strong current against us, it would have been almost impossible for our little sailing vessel, unaided, to pass east of Point Barrow, which would have been unfortunate for our enterprise, as we should have been compelled to make long preliminary trips in small parties to our various working grounds, which would have weakened our parties and exhausted our supplies.

"But we have reached the place from which the primary purpose of the expedition, the exploration of Beaufort Sea, may be followed, possibly with greater advantage than from any other place in the Arctic except from Cape Prince Alfred.

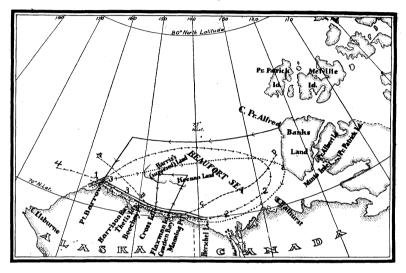
"The Belvedere left us a little west of the Thetis Islands, and we beat eastward in open water. At Cross Island, the ice pack was close inshore, and a few miles further east our progress was stopped by the pack, which hung close to the sand spits marking the outer limit of the lagoon-like stretch of water between Flaxman and Thetis Islands. The lagoon was open, and we could do nothing else than enter it and beat eastward in shoal and narrow water. We soon saw that we could not go outside again, as the ice to the east was pressed hard on the land. On Sept. 10 we gave up further attempt to reach Minto Inlet this season. If a fair wind should drive the ice off shore, we might work further eastward this fall; but at so late a date we could not reach Minto Inlet, and would be forced to winter on the coast in some place less suitable for work than Flaxman Island.

"We have seen the actual conditions here, and whalers have told us of their long experience in this region. We have, therefore, been able to collect valuable facts that have a bearing on the question of the land which is believed to exist in the Arctic Ocean north of Alaska.

"The reasons for believing that this land exists, as summed up by Sir Clements Markham and Dr. R. A. Harris, are (1) the very slight movement of the heavy pack ice off the American coast, (2) the small diurnal range of the tide, (3) the land reported to have been seen by Captain Keenan, and (4) the reports of Eskimos of Point Barrow and eastward concerning land to the north.

"Heavy and persistent fogs have allowed us only occasional glimpses of the pack ice, but from the little we have seen of it we have no doubt that it is heavier than the ice met in the waters of Greenland and Franz Josef Land.

"We know to our cost that the pack is slow in movement and



EXPLANATION OF THE MAP.

The broken line A, B, C, D, shows approximately the southern edge of the ice pack in the most favourable ice years. Between A and B whalers can go as far north of Point Barrow as the line indicates only late in August or early in September. Between B and C the ice edge is close on land in all seasons. East winds push the ice on Cross Island, and west winds, on Manning Point. Between C and D the edge of the ice pack in summer is far off shore, and whalers can steam farthest north when the winds are east or south-east.

The two parallel black lines show the water crack that is usually open in the spring. Spring whaling is carried on at Point Barrow in this crack.

The line of arrows shows the probable route of the whale in these waters and the figures indicate the catch seasons as follows: _r—late in April and during most of May; _2—the latter part of July and early in August; _3—the latter part of August and beginning of September; _4—the latter part of September.

The line of dots with arrowheads shows the probable route of geese and ducks to breeding places on the conjectured land and on Banks Land, and their return route along the coast in the fall.

The solid black lines with arrowheads show the proposed sledge routes over the sea ice, this spring and in the spring of 1908 in search of new lands, as explained in the text.

prone to lie near the land. At Point Barrow the pack recedes from the coast, save in exceptional years, such as this one; but further east, toward Cross Island, the pack ice, according to the whalers, is almost always within sight of the coast.

In passing Cross Island this year, the whaling fleet had to sail in three fathoms of water to get around a tongue of pack ice. When we passed the same place a fortnight later, the tongue of ice had moved two or three miles east and was close on to the land. The whaling fleet has trouble almost every year in passing Cross Island.

"In the spring, there is usually a narrow lane of water in the pack to the north of Cross Island some twenty miles off shore, where the Eskimos carry on their spring fishing. The pack outside of this lane of water seems motionless except for a slight movement perpendicular to the coast. Along other coasts—north of Point Barrow, for example—the ice is in motion all through the year, and the movement is greatest in the spring months.

"One of the most frequented whaling grounds is north and north-west of Point Barrow, and the whalers are often able to go far from land in those directions. English explorers, also, have penetrated 180 miles northwest and 85 miles north of Point Barrow (directions true).

"From Herschel Island, also, whalers are able to go quite far north, and this year, late in July, vessels sailed between 50 and 60 miles true north from the island without meeting any floating ice; and a dense water sky indicated water still further to the north. This is not exceptional. Year after year, whalers are able to repeat these voyages. McClure in 1850 attained 75 miles north of Herschel Island, where the pack stopped him. The sea is almost invariably open early in the year to the north of this part of the coast. But at Cross Island and the coast in its neighbourhood the conditions are different. No navigator has been more than a few miles north of the coast, excepting Captain Keenan, who claimed to have seen land.* Unfortunately, his data are lost, and his position is open to conjecture. As far as can be learned it was between Cross Island and Beechey Point. This heavy and almost immovable ice certainly indicates the existence of land in the unknown sea beyond.

"Captain Keenan is dead, but the whalers, who knew him, agree that he was a very reliable man. They say he would not have reported that he had seen land if he were not positively sure of the

^{*} The late Marcus Baker, in the National Geographic Magazine (Vol. V), wrote the following facts as they were told by Captain Edward P. Herenden, a whaler:

[&]quot;The only report of land having been seen by civilized man in this vicinity was made by Captain John Keenan, of Troy, N. Y., in the seventies. He was at that time in command of the whaling bark Stamboul, of New Bedford. Captain Keenan said that, after taking several whales, the weather became thick, and he stood to the north, under easy sail, and was busily engaged in trying out and stowing down the oil taken. When the fog cleared off, land was distinctly seen to the north by him and all the men of the crew; but, as he was not on a voyage of discovery, and there were no whales in sight, he was obliged to give the order to keep away to the south in search of them. The success of his voyage depended on keeping among whales.

[&]quot;The fact was often discussed among the whalemen on the return of the fleet to San Francisco in the fall. The position of Captain Keenan's ship, at the time land was seen, has passed from my mind, except that it was between Harrison and Camden Bays."

fact. Several men of his crew have been shipmates with whalers now in these waters who report that Keenan's crew were certain that they had seen land and described it as high, rolling country.

"Dr. Harris's argument, based upon tidal action as indicating land to the north, would be worthless if the tidal observations were wrong. But these observations were made by two or three different observers, and it is not likely that all would be mistaken in the results of their tidal work. We cannot reject the observations of such men as Dease, Simpson, Franklin, and others, whose studies of the ice and tides certainly lead to the conclusion that there is land to the north of Cross Island and the adjacent coasts.

"The Eskimos near Camden and Harrison Bays say that in the brightest days of early spring they can see land far to the north. There are Eskimo legends, also, that members of their tribe were once driven to this land by a southerly gale and told about it when they succeeded in returning to the mainland.

"The whalers at Point Barrow go out on the pack to a lead which opens in the ice every season and harpoon whales as they travel in this channel to the northeast. Where the whales go will probably not be known until Beaufort Sea is well explored. The trend of the crack is away from the coast, and the whales use it to reach some feeding ground where they are not disturbed. The Eskimos and whalers agree that they have never seen whales travelling east along the coast in the spring.

"It is not till late in August and early in September that they catch whales in the region of Cross Island and westward, when the whales are migrating to the west and south. When the ice opens at Herschel Island it gives the whalers a chance to sail east, and they usually secure fine catches between Banks Land and Cape Bathurst, just as the whales are coming from the northwest.

"These facts throw some light upon the migration of the whale. It disappears from Point Barrow, in a northeast direction, in the latter part of May, and no signs of whale are seen along the coast of the mainland till the latter part of July, when whaling begins between Banks Land and Cape Bathurst, the whales then coming from the northwest. When the animals leave the waters south of Banks Land, they travel along the coast to the west. It is thus seen that the whales make a large circuit to the north of Alaska, starting northeast near Point Barrow, reaching the coastal waters again at Cape Bathurst in the east, and completing the circuit by returning westward to Point Barrow along the shore.

"Where do the whales go after leaving Point Barrow in the

spring? They probably follow the water lead, which perhaps takes them to the north of the supposed land mass.

"It is hard to understand why the ice pack should open and year after year supply the whales with a channel passing through it by which they can travel far to the northeast. The only reasonable explanation is that there is land of some magnitude in the north from which the ice recedes in the spring.

"Myriads of birds pass Point Barrow in the spring, travelling, like whales, to the northeast. It is well known that a great number of them must breed elsewhere than on the mainland; for they do not live on this coast, but pass over it to the north, and are not seen again till in the fall, when they are travelling south. Geese come from northward to Herschel Island as late as August 18. Geese and ducks, like the whale, follow the coast closely in going west in the fall.

"Considering all these facts, it does not seem to me that we are too optimistic in expecting to find land not very far to the north of the Alaskan coast. Here are our plans for next spring:

"Early in 1907 a party of two or three men will strike out on the ice from Flaxman Island towards the true north-northeast. After following this direction for about 150 miles, the party will travel westward, parallel with the Alaskan coast, for about 100 miles, and thence will march due south to Cross Island. The party will take soundings all along the route whenever opportunity occurs.

"This journey, in connection with the sledge trip which we shall make from Cape Prince Alfred on Banks Land in the spring of 1908 towards the west, should solve the problem as to the existence of land of any magnitude between 76° N. Lat. and the coast of Alaska."

A LETTER FROM MR. STEFANSSON.

The Society has received a letter from Mr. V. Stefansson, the ethnologist of the Anglo-American Polar Expedition. It is dated Shingle Point, Arctic Ocean, Nov. 17, 1906. This is in the neighbourhood of the Mackenzie delta. Mr. Stefansson reached the Arctic by way of the Mackenzie, while the rest of the party took the sea route in their vessel. His reason for so doing was the possibility that the *Duchess of Bedford* might not reach Cape Bathurst last year (as proved to be the case), and he did not wish to be stranded for a year, unable to reach the people whose ethnology he was expected to study—the so-called Kogmollik Eskimos.

He reached Herschel Island on Aug. 9, and found most of the

whalers waiting for the steamer that every year brings coal and other supplies. Late in August, the whalers gave up hope that the supply ship would arrive, and started west to get through the ice, if possible, and sail home. They offered to take Stefansson with them to meet his ship; but he declined to go with them, as there was a large chance of missing his vessel if she were on the way west. Mr Stefansson continues:

In planning to come by the river route, I had considered the possibility of my ship not coming, but I was assured that the supply steamer had never failed to penetrate to Herschel Island. She brings all sorts of supplies, and sells them practically at San Francisco prices. I, therefore, brought only summer clothing, such books as I expected to use on my way down, my camera, and rifle. . . .

When I had determined to stay here [instead of going with the whalers], Mr. Harrison, an Englishman, working under the auspices of the Royal Geographical Society, kindly offered to let me share his camp. He had five rifles, about 10,000 cartridges, a good camping outfit, dogs, a whale boat, and three native families already hired. This was a windfall for me, though he had almost no provisions—about three weeks' supply for his party, consisting chiefly of gasoline-soaked flour, that the ship's crew had refused to eat.

We left Herschel Island late in August, and came to Shingle Point. Here I remained behind in a Kogmollik village, living on fish exclusively (and no salt, either) for a month, while Mr. Harrison proceeded inland to the south end of Eskimo Lake, some thirty miles east from a point 20 to 30 miles north of the junction of the Peel River with the Mackenzie. The lake is either absent from most maps or is incorrectly placed.

I dared not leave the coast before the young ice formed and made the ship's coming impossible. Up to early in October I lived with my Kogmollik host very pleasantly. The first week in that month it froze up and we moved into his sod house, fifteen persons in one small room. Two members of the family had consumption, and the prospect was not pleasant. Fortunately, a Danish sailor, married to an Eskimo woman, had come here from Herschel I. to build a house, which turned out a fairly good one, with a glass window. He also had plenty of coal oil and good lamps. I, therefore, made it my excuse that I wanted good light for writing and moved into his house. . . .

I shall go in a few days to join Mr. Harrison. If he has been so fortunate as to procure food, I shall remain with him. If not, I shall come back here.

Mr. Stefansson adds that though the ice conditions to the west of Herschel Island had been very bad, navigation was excellent to the east. The west coast of Banks Land was free from ice as far as the whalers went, and so was the east coast, at least to Minto Inlet. The whaler *Narwhal*, leaving Herschel Island on Sept. 7th, went to Cape Bathurst, thence up along the west coast of Banks Land, then west to 180 miles north of Herschel Island, and finally south, without seeing a cake of ice.

Mr. Leffingwell left the *Duchess of Bedford* in October to make an overland journey of about 150 miles from the winter quarters of the ship, in order to deliver the mail to the three mounted policemen stationed at Herschel Island. One or two overland mails pass between the mounted police stations from Herschel Island to Dawson in winter, and in summer one or two mails are carried by the steamers on the Mackenzie. Mr. Leffingwell wrote to his father, at Knoxville, Illinois, that he had a difficult journey of five weeks between Flaxman and Herschel Islands. He has probably returned to the *Duchess of Bedford*, in order to participate in the

spring sledging over the Arctic Sea, as outlined in Captain Mikkelsen's letter above.

At the time Mr. Stefansson wrote he had not seen Mr. Leffing-well. If he met him later, the plans outlined in his letter to the Society may have been changed. He adds that after joining Harrison, they expected to hunt eastward from Eskimo Lake, and hoped to cache deer meat towards the Anderson River and perhaps as far as the Horton (River la Roncière). With the lengthening days in March they planned to sledge eastward with one team and two or three Eskimos to the mouth of the Coppermine River, and then return along the coast, mapping it if there was time. Mr. Stefansson expected to be back at Herschel Island late in July to meet the *Duchess of Bedford*. His letter concludes:

I am spending the winter very profitably. The house is full of Eskimo talk all the time, though there are two white men in it. I am learning the language, and am gaining an insight into the native character and familiarity with the native habits.

GEOGRAPHICAL RECORD.

AFRICA.

Delimiting International Frontiers.—The total length of international frontiers traversed by British Boundary Commissions in Africa up to August, 1906, is 9,081 miles.

The following are the stages in the business of delimiting an international frontier: First there is an international agreement drawn up on broad lines; each Government then appoints Commissioners, who meet at one end of the boundary and march along it, exploring and mapping the boundary zone. The Commissioners, having arrived at the other end, agree upon the geographical position of the principal features and decide upon the details of the frontier, paying special attention to the incidence of tribal boundaries and to the future nationality of the villages. They then march back along the line, erect pillars and inform the chiefs. A protocol in duplicate is drawn up and signed, and each Chief Commissioner forwards the protocol and maps with a report to his Government. The protocol is then approved by the two Governments, and in some instances a fresh agreement on the terms of the protocol (with, perhaps, minor modifications) is drawn up and signed by representatives of the Governments.

The technical work of boundary commissions has shown steady improvement, and these commissions have had a considerable share in stimulating interest in geographical surveying. Excellent technical work has been carried out by the most recent commissions—the Yola-Chad, the Anglo-German (Uganda), the Victoria-Kilimanjaro, and the Anglo-Portuguese (Zambezi). To these and other commissions we owe much exact geographical knowledge—a most useful asset to the Protectorates concerned.